

**United States Patent** [19]**Hoshikawa et al.**[11] **Patent Number:** **4,640,583**[45] **Date of Patent:** **Feb. 3, 1987**[54] **DISPLAY PANEL HAVING AN INNER AND AN OUTER SEAL AND PROCESS FOR THE PRODUCTION THEREOF**[75] **Inventors:** **Jun Hoshikawa; Yukihiro Iwashita,**  
both of Shiojiri, Japan[73] **Assignee:** **Kabushiki Kaisha Seiko Epson, Japan**[21] **Appl. No.:** **632,180**[22] **Filed:** **Jul. 19, 1984**[30] **Foreign Application Priority Data**

Jul. 22, 1983 [JP] Japan ..... 58-134044

Jul. 28, 1983 [JP] Japan ..... 58-138059

Sep. 27, 1983 [JP] Japan ..... 58-178434

[51] **Int. Cl.<sup>4</sup>** ..... **G02F 1/13**[52] **U.S. Cl.** ..... **350/343; 350/320;****350/339 R**[58] **Field of Search** ..... **350/343, 320**[56] **References Cited****U.S. PATENT DOCUMENTS**

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Silberman & Beran[57] **ABSTRACT**

A display panel having a pair of spaced apart flexible substrates and a display medium sandwiched therebetween. A multiple seal contains the display medium between the substrates and maintains the substrates in spaced separation. The multiple seal includes a first seal for strongly adhering to the substrates and a second seal for forming a low water permeability seal. A process for the production of a display panel having a pair of spaced apart flexible substrates and a display medium sandwiched therebetween. A first sealant which strongly adheres to the substrates is printed on the interior surface of one substrate. A second seal, which has low water permeability, is printed on the other substrate. A spacer is scattered on at least one of the substrates. The substrates are combined together and the sealants are cured to form a display panel.

**56 Claims, 22 Drawing Figures**